



Comparison between global chemistry models and ground-based FTIR data for several important tropospheric gases

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Accurate monitoring of the global variability and evolution of important greenhouse gases such as CH₄ and CO (an indirect greenhouse gas), is one of the key requirements needed for deepening our scientific knowledge of the ongoing atmospheric processes as well as providing accurate scientific predictions towards the future evolution of the earth's atmosphere on which policymakers can act.

Ground-based stations, while providing accurate data, are limited in their coverage of the entire globe. SCIAMACHY onboard ENVISAT however is capable of providing data for CO and CH₄ with the required global coverage, but the data must be validated first. Several sources of independent data can be used for validation, but each of them has its own problems of coverage, accuracy, representativeness, etc. For example, comparing the satellite data with ground-based FTIR data is hindered by several factors such as the earth's topography or collocation issues. Alternative datasets for validation are coming from global chemistry models such as TM3, TM5 and IMAGES, which may give an immediate overview of the data quality on a global scale, provided the models are reliable.

This work discusses the results of comparisons between model data and FTIR data as to total column amounts of CO and CH₄. The FTIR data have been provided at 11 stations of the NDSC (Network for the Detection of Stratospheric Change) and cover latitudes between 78° S and 79° N. The comparison results indicate to what confidence the model data can be exploited for validation of SCIAMACHY and possibly other satellite experiments.